CLAIMS

1. An optical switch/modulating device comprising:

a pump waveguide that provides a pump light to said switch/modulating device; and

a waveguide element positioned parallel to said pump waveguide that receives said pump light that causes said waveguide element to switch or modulate a signal light running through the pumped waveguide.

2. The optical switch/modulating device of claim 1, wherein said waveguide element is totally isolated.

3. The optical switch/modulating device of claim 1, wherein said waveguide element is surrounded by SiO_2.

4. The optical switch/modulating device of claim 1, wherein said waveguide element and said pump waveguide form an active region.

5. The optical switch/modulating device of claim 1, wherein said pump waveguide comprises SiN.

6. The optical switch/modulating device of claim 1, wherein said pump waveguide comprises Si.

7. The optical switch/modulating device of claim 1, wherein said pump waveguide comprises a height of 200nm and width of 400nm.

8. The optical switch/modulating device of claim 1, wherein said pump waveguide comprises a single-mode behavior for a pump wavelength.

9. The optical switch/modulating device of claim 1, wherein said pump waveguide and waveguide element are surrounded by SiO_2.

10. The optical switch/modulating device of claim 1 further comprising input and output waveguides.

11. The optical switch/modulating device of claim 10, said input and output waveguides comprise Si.

12. The optical switch/modulating device of claim 10, wherein said input and output waveguides are surrounded by SiO_2.

13. A method of forming an optical switch/modulating device comprising:

providing a pump waveguide that provides a pump light to said switch/modulating device; and

positioning a waveguide element parallel to said pump waveguide that receives said pump light that causes said waveguide element to switch or modulate a signal light running through the pumped waveguide.

14. The method of claim 13, wherein said waveguide element is totally isolated.

15. The method device of claim 13, wherein said waveguide element is surrounded by SiO_2.

16. The method of claim 13, wherein said waveguide element and said pump waveguide form an active region.

17. The method of claim 13, wherein said pump waveguide comprises SiN.

18. The method of claim 13, wherein said waveguide element comprises Si.

19. The method of claim 13, wherein said pump waveguide comprises a height of 200nm and width of 400nm.

20. The method of claim 13, wherein said pump waveguide comprises a single-mode behavior for a pump wavelength.

21. The method of claim 13, wherein said pump waveguide and waveguide element are surrounded by SiO_2.

22. The method of claim 13 further comprising providing input and output waveguides.

23. The method of claim 20, said input and output waveguides comprise Si.

24. The method of claim 16, wherein said input and output waveguides are surrounded by SiO_2.